



Summer Field School at Cherryfield

By Steven Anthony

The Cherryfield site was chosen again this year for the MAHS annual Field School in Underwater Archaeology. Eight students, fresh from completing the MAHS Introductory Course, registered for the first field school of the 2005 season. The students, pursuing their final certification in the MAHS underwater archaeology series, included John Dowdle, Cynthia Dowdle, Chris Dunn, Kelley Elliott, Dave Lambert, Craig Lukezic, Michelle Ryan, and Joyce Steinmetz. Several MAHS members volunteered to conduct the Field School. Director of Education, Tom Berkey, served as Project Manager; President, Steven Anthony, served as Assistant Project Manager; Kurt Knoerl served as the Principal Investigator; Michele Anthony served as Dive Supervisor and Project Photographer; and Michele Damian served as a dive trainer. Dave Howe provided the vessel *Roper*, and served as her skipper throughout the field school.

This site was chosen for a variety of reasons. First and foremost, was the

convenient proximity to Washington, D.C., area students and the home port of the vessel *Roper*, which hails out of nearby Tall Timbers Marina. Also, Tom was able to secure reasonably priced accommodations at the Harry Lundeberg School of Seamanship that is just around the point from the marina and about a half hour steaming time to the shipwreck site.

The site was named after Cherryfield Point, which is the closest point of land in this rural part of southern Maryland. MAHS has been conducting a multiyear study of this wreck for the state of Maryland. Several field schools have been conducted at this site in prior years, and Kurt's research and analysis suggest that the vessel remains could possibly be the wreckage of a Ram Schooner. In the Winter 2002 edition of *MAHSNEWS*, Kurt provided a summary of previous research efforts and an extensive discussion of the data collected from the site. Ram Schooners were indigenous to the Chesapeake Bay. Approximately thirty of these vessels were built

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*Kurt Knoerl and Tom Berkey demonstrate the trilateration survey method on dry land.
Photo by Michele Anthony.*

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Notes from the Prez – Steven Anthony

It was a beautiful summer here in the Mid-Atlantic States this year, and MAHS members made the best of it.

In June, MAHS conducted its 2005 Summer Field School on the Cherryfield shipwreck site for the third season. The Cherryfield site is located at the confluence of the Potomac and St. Mary's rivers and is in close proximity to our Washington, D.C., area students. Eight students from both the live class and video courses worked under the direction of Tom Berkey, MAHS Education Director, and T. Kurt Knoerl, Archaeologist and Principal Investigator. The students participated in the ongoing project of mapping and surveying this site and collecting data for the State of Maryland. See the article enclosed for more highlights about the 2005 Field School.

Our speaker series continued in full swing over the summer as well. MAHS members attending the General Membership meetings enjoyed several excellent presentations, including an informative review of submarine museums located in the Washington, D.C., area and throughout the country, by Greg Stitz; a discussion about the archaeology of the Washington Navy Yard, by Charles Leedecker; and an overview of the Hunley project, by Dr. Robert Neyland.

The Board of Directors also continued its development of the new MAHS textbook over the summer under the watchful direction of Ray Hayes and Jim Smailes. In July, Ray provided the Board with a revised draft of the new text on CD for review and comment. In its present form, the book is 450 pages including illustrations. The final version is targeted to be a little more than 220 pages.

The MAHS Board also turned its attention to the Photography and Videography class and revised the course content to bring the class up to date, with more focus on the evolving use of digital cameras and their application in the field of underwater archaeology. This popular program will be even more informative for the 2006 course.

However, it wasn't all work this summer. The MAHS Annual Summer Picnic and Crabfeast was held at the Fairfax County Police Association facility this year. Everyone agreed that this was an excellent location for the picnic, and we extended our grateful appreciation to John Kuch for making the arrangements. Over a third of the membership attended the picnic, and the crabs disappeared quickly.

One important announcement for those who may not have received the word yet, as of September, MAHS

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between 1889 and 1911, many of which were constructed in Bethel, Delaware. Although Ram Schooners often varied in length from 34 to 47 meters, their beam measurements prior to 1890 were consistently just shy of 7.3 meters. This narrow beam design facilitated passage through the Chesapeake and Delaware Canal.



Kurt Knoerl explains mapping techniques to the students. Photo by Michele Anthony.

During the June 2002 Field School, Kurt asked the students to document some of the overall measurements of this wreck. These measurements revealed that the vessel was about 42 meters in length with a beam of 7.3 meters. Parts of the keelson were present but very little remains of the rider keelsons, and there was no evidence of sister keelsons or a centerboard trunk. So, in spite of the fact that the overall measurements were consistent with those of a Ram Schooner, Kurt speculated that the wreckage might have been a canal-going barge instead. For more definitive findings, Kurt was going to need additional information.

On Friday evening, June 17, the students and trainers convened about 8:00 pm in the Maryland Room on the second floor of the Lundeberg School facility. This was a spacious conference room graciously provided by Howard Thompson, manager of the facility. The Lundeberg School of Seamanship is a modern and spacious campus that provides training and accommodations for seamen participating in continuing education programs of the Seafarers International Union. The school was a pleasant and comfortable setting for our course.

Tom and Kurt kicked the meeting off with an initial briefing and orientation. Then, Craig Lukezic, who is an archaeologist for the state of Delaware, provided the group with an informative presentation on the Lewes Maritime Archaeology Project. This project is the

ongoing study of an unknown shipwreck site lying in the Harbor of Refuge, approximately one thousand yards from Lewes Beach. Dan Griffith, former Delaware state archaeologist, is supervising this project for the state. Craig described the progress and accomplishments to date and explained the reasons that archaeologists believe the site may be the remains of a colonial merchantman operating along the Atlantic coast between 1740 and 1760. The presentation was a special treat and was enjoyed by all.

On Saturday morning, June 18, everyone was up early and convened in the cafeteria for breakfast. Anticipation of the day's events was running high. After breakfast, the students assembled on the lawn area adjacent to the dock for a dry-land trilateration exercise conducted by Tom and Kurt. This is the part of the field school where students get to practice the trilateration survey techniques that they learned in the Introductory Course. A mock shipwreck site was set up on the lawn, and the students tried their hand at taking measurements and creating a scale drawing of the practice "site".

In the meantime, Dave made the *Roper* ready at the dock. So, as soon as the dry-land exercises were complete, everyone loaded their gear and located a seat for the trip to the wrecksite. We shoved off at about 11:30 am and steamed towards the mouth of the St. Marys River, which empties directly into the Potomac River and in turn empties into the Chesapeake Bay a short distance away. It was a picture perfect day with sunny skies and only a slight breeze that provided a calm and pleasant boat ride along one of the most scenic and historic rivers in the state. Some of the students were experiencing these waters for the first time. As the bay breezes washed over us we followed the overflight of blue herons and took the opportunity to scan the picturesque shoreline that is so characteristic of this part of Maryland.

It was a short boat ride and soon the wrecksite



L-R: Michelle Ryan, Tom Berkey, and Steve Anthony prepare for the first dive. Photo by Michele Anthony.



Mid day lunch break onboard the Roper. Photo by Michele Anthony.

loomed ahead. As the *Roper* made her approach, Dave set the anchor, and Tom and I conducted the pre-dive safety discussion. Then Kurt laid out the research plan and tasked the dive teams with their respective assignments. This part of the river is very shallow and the *Roper* could only get within 100 yards of the site. So, the teams entered the water and proceeded to wade the remaining distance to the wreck. We located the structure close to the shoreline lying in only four feet of water. Although SCUBA might be needed to collect some of the measurements, the shallow water precluded the need for much diving. Our dive supervisor would have an easy job on this trip since there was obviously minimal diving risk at the dizzying depths of four feet! The greatest challenge of the day would be protecting against sunburn and avoiding the Chesapeake Bay blue claw crabs that made their home among the old timbers and framing of the wreck.

Upon completing their assignments, the dive teams exited the site and waded back to the *Roper* where they proceeded to report and discuss their findings with Tom and Kurt. Once all of the teams were aboard, the *Roper* was underway and homeward bound. The conversation soon turned to food and everyone was eagerly anticipating ice cold drinks and sampling Southern Maryland style cooking upon arrival. In about thirty minutes, the *Roper* settled at the dock and everyone offloaded their gear and rinsed and hung their wetsuits so that they would be ready for the next day. Then we were off to happy hour and supper.

Two groups formed during happy hour based on the available choices for dinner, one for seafood and the other for barbecue. Although neither group reported that they had found gourmet dining, there were ample portions and something on the menu for all.

After supper, the students assembled in the Maryland Room at the Lundeberg school where Tom

and Kurt discussed the day's activities and evaluated the data collected. Students used this opportunity to ask questions and complete their field notes and drawings. Measurements were plotted and any problems encountered with the data were fully discussed. After sorting and cataloging the information, Kurt established new research assignments for the following day. *Roper* was scheduled to be at the dock again at 9:00 am the next morning so at the conclusion of the meeting, most of the group retired early.



Tom Berkey helps John and Cynthia Dowdle plot their data. Photo by Michele Anthony.

On Sunday morning, June 19, we convened in the dining hall for breakfast and around 8:30 am everyone proceeded to the dock to load up the *Roper*. It was a cloudy, cool morning and a smoky mist lifted off the water. But it was early, and it looked like the weather gods might still deliver a sunny day. *Roper* shoved off at 9:30 am and the short boat ride to the site passed quickly. As we began to approach, the students, now

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K. Knoerl helps John and Cynthia Dowdle plot their data. Photo by Michele Anthony.

Carlisle Bay Shipwreck Trail, Barbados, B.W.I.

By Dennis Knepper

Shipwreck trails are becoming an increasingly popular part of maritime heritage programs, both in the United States and around the world. A shipwreck trail typically consists of a group of sites underwater, on land, or both that are linked by attributes such as proximity or theme. By making maritime archaeological sites accessible to the public, shipwreck trails foster educational opportunities, providing reliable context and background information through means ranging from underwater plaques or laminated dive slates, to booklets, brochures, on-land exhibits, and various community outreach programs. The trails also take pressure from more sensitive archaeological sites and vulnerable natural reefs that are less able to sustain diver traffic. Programs associated with shipwreck trails can further increase the value of individual sites to the diving and non-diving public, promoting a sense of stewardship within local communities by encouraging citizens to maintain and monitor the sites.

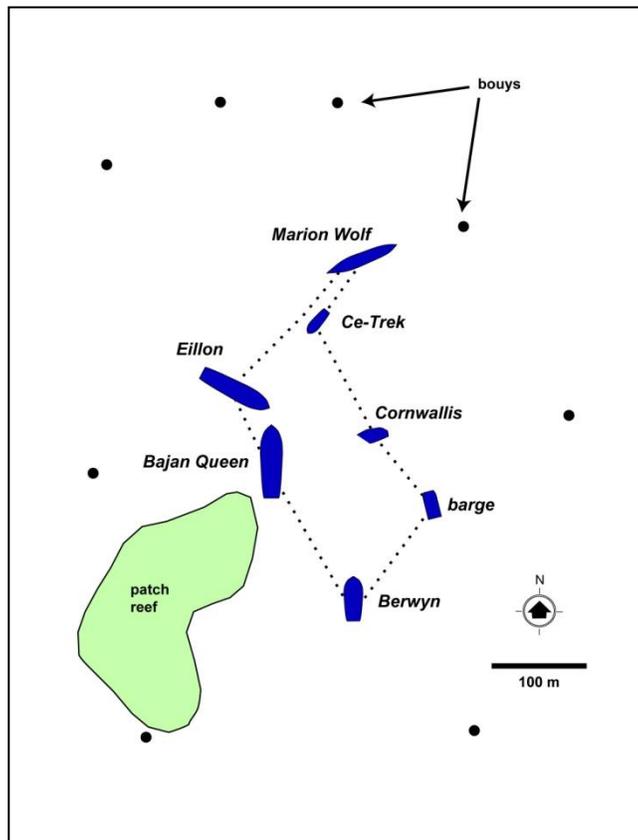
One of the better known examples of a shipwreck trail in the United States is the Florida Keys National Marine Sanctuary Shipwreck Trail, which consists of nine sites stretching from Key Largo to Key West. A smaller trail is nearing completion on Florida's east coast, in Biscayne National Park. Other examples in this country include four trails along Wisconsin's Great Lakes coastline, with a total of 14 wrecks in Lake Michigan and four in Lake Superior, and a smaller trail planned along Ohio's Lake Erie shoreline. Outside the U.S., most Australian states have shipwreck trails, while some states, such as Victoria, have developed local trails that are amalgamated into larger regional groups. Other trails in varying stages of development include a group of sites in southern Norway, and in the Caribbean, the Cayman Islands Maritime Heritage Trail, a land-based driving trail that combines terrestrial and underwater

sites. Recently added to this growing list is the Carlisle Bay Shipwreck Trail on the island of Barbados.

Formally created in 2002, the Carlisle Bay Shipwreck Trail consists of seven sites lying in the harbor of Bridgetown, Barbados' capital and main port. Unlike trails that consist of wrecks scattered over a wide geographic area, the Carlisle Bay Shipwreck Trail is formed around a nucleus of *in situ* wrecks lying close together in the clear, shallow waters of Barbados' most important historical anchorage. The sites include boats and ships that sank in the bay in storms at various times during the twentieth century. Added to these wrecks are several vessels intentionally scuttled nearby to form a tight cluster of sites.

Arranged in an irregular oval measuring approximately 400 by 300 meters, the sites lie in protected water only a short boat ride from shore. Some of the wrecks are in waters less than 20 feet deep, representing an easy dive for beginning scuba divers or for snorkelers. Other wrecks rest in up to 60 feet of water and thus provide more of a challenge for experienced divers. Some of the larger vessels have been opened up, with hatches and potential snags removed to allow safe penetration into engine rooms and cargo holds and to provide good lighting for

underwater photography. Interspersed among the wrecks are several 18th- and 19th-century anchors and a series of concrete pilings that serve as route markers. While a tour of all seven of the sites can be made in a single long dive, the wrecks can be investigated more closely in shorter dives individually or in groups. Creation of the trail was largely the work of OceanArk, a non-profit foundation dedicated to environmental conservation on Barbados. The construction of artificial reefs is an important component of OceanArk's work. The avowed goals in developing



The Carlisle Bay Shipwreck Trail. Bouys mark a no-anchor zone for fishing boats that includes a small patch reef southwest of the trail.

underwater photography. Interspersed among the wrecks are several 18th- and 19th-century anchors and a series of concrete pilings that serve as route markers. While a tour of all seven of the sites can be made in a single long dive, the wrecks can be investigated more closely in shorter dives individually or in groups.

Creation of the trail was largely the work of OceanArk, a non-profit foundation dedicated to environmental conservation on Barbados. The construction of artificial reefs is an important component of OceanArk's work. The avowed goals in developing

the trail were twofold: to provide a basis for reef formation, and to develop attractive dive sites of interest in terms of both cultural features (the wrecks) and natural features (the coral and fish that are attracted to the structures). As noted on the OceanArk website: “Our intention is to purposefully sink ship wrecks and aircraft around Barbados where coral has been severely depleted and now needs protection.”



Snorkelers swimming over one of the wrecks on the shipwreck trail: the dark shadow below the swimmers is the Bajan Queen. All photos by Dennis Knepper.

A considerable amount of work goes into intentionally placing a vessel on the ocean floor. Obtaining the rights to the boat is only the first step. Most of the wrecks are 20th-century, metal-hulled vessels that must be stripped and cleaned prior to sinking. The largest and most complete vessel in the Carlisle Bay trail is the *Bajan Queen*, intentionally sunk in 2002 as one of the trail’s major attractions. Originally a 112-foot, 400-ton tug boat known as the *Pelican*, the vessel ably served the Barbados Port Authority for more than 20 years, from 1961 until she was sold in 1982. Renamed the *Bajan Queen*, she became a popular tourist vessel, a party boat plying the coastal waters daily until her final retirement in 1999. The scuttling of the *Bajan Queen* represented the first attempt in Barbados to fully clean a dive wreck to the Canadian Ocean Disposal Guidelines, which have been adopted by the island’s Coastal Zone Management Unit as working rules until specific local legislation is drafted. Pipes, wire, glass, and other items that might pose a threat to divers were removed. Upper decks, wood, canvas, and other materials that would either deteriorate or float off were cut away. Oils and chemicals were removed, and the engines, tanks, and any potentially contaminated surfaces were repeatedly washed with environmentally friendly, citrus-based detergents. To allow safe entry and exit, doors and hatches were either removed or welded in place, and in some cases, additional holes were cut in the hull.



Interior of the Bajan Queen.

Other vessels on the trail include the *Berwyn*, a French tug that sank in 1916. As the story goes, the *Berwyn*’s crew was anchored in the bay, loading supplies in preparation for returning to France during World War I. A storm began to blow, and the crew seized the opportunity, intentionally miss-loading the 80-foot tug, causing it to sink, thus allowing them to remain on Barbados rather than go back to the war. Many of the French names on the island today are supposedly traced to the crew of the *Berwyn*. Another wreck on the trail, *Ce-Trek*, was one of two 40-foot,



A 19th-century stock anchor placed between vessels on the trail.



The bow of Ce-Trek.

ferro-cement fishing boats built as an experiment in the 1970's. Although seaworthy, the boats did not handle well and their internal rebar structure corroded. *Ce-Trek* was eventually scuttled in the early 1980s. Another large vessel, *Eillon*, was a 110-foot freighter seized by authorities as a drug runner and scuttled in 1998. Also part of the trail is a section of the hull of the *Cornwallis*, a Canadian merchant vessel that was torpedoed by a German submarine while anchored in Carlisle Bay in 1942. She was refloated, repaired, and returned to service, only to be torpedoed for the second and last time two years later in the Gulf of Maine. Nearby is the keel of the *Marion Wolf*, a Nova Scotia schooner used for many years in inter-island trade. The only 19th-century vessel on the trail, the *Wolf* was built around 1880. She was still used occasionally as a trading vessel when she sank during Hurricane Janet, a Category 5 storm that ripped across the Windward Islands in 1955 with 170 mile-per-hour winds.

Last on the trail, but not least, is a small, unnamed barge that lies in 15-20 feet of water. Measuring some 30 feet in length, the barge was a garbage scow used



A sea turtle swimming along the hull of the Eillon.

during construction of Barbados' new harbor in the late 1960s. She was originally disposed of in deep water, but was raised in the 1980s by local divers thinking her hull was made of salvageable aluminum. The hull turned out to be steel, and the barge was again dumped, this time about a half-mile from the shipwreck trail. It was recently moved to its present location to become part of the trail. The shallowest of the trail's sites, the barge was used for an underwater archaeology field school held last March by the Barbados Marine Trust, as described in a separate article in this issue of *MAHSNEWS*.

The Carlisle Bay Shipwreck Trail was "built on a shoestring budget by volunteers," notes OceanArk founder, Dr. J. Gordon Murphy. The trail has been cited by government officials as an example of a well-



Diver swimming over the deck of Ce-Trek

designed and well-managed heritage tourism attraction. It is a safe dive site and has rapidly been colonized by a wide range of coral and fish species: sea turtles and sea horses can regularly be seen on the wrecks.

As for the future, enquiries have been made into obtaining an abandoned Concorde, the luxury airliner, that now sits on the side of the flight line at Barbados' Grantley Adams International Airport. The entire fleet of supersonic transports was permanently retired in 2003. So, you can't fly the Concorde any more, but who knows, you may one day be able to dive the Concorde in Carlisle Bay!

Some of the information for this article was derived from the OceanArk Foundation website:

<http://www.oceanark.net>.

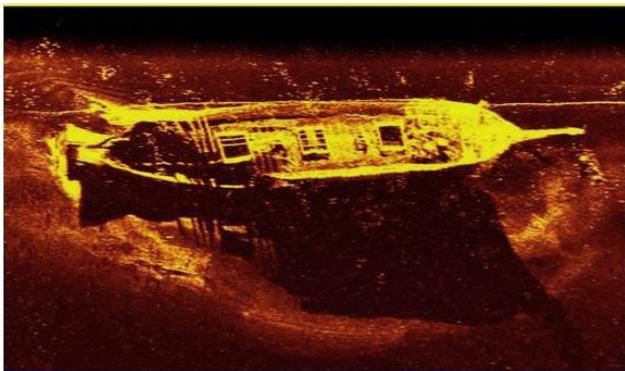
Additional information was provided by J. Gordon Murphy, of OceanArk; and David Gill, of the Barbados Marine Trust. ⚓

Estimating Success in Blackwater Surveys

By Robert Speir and James A. Smailes

In the previous issue of *MAHSNEWS*, Annette Aronson described the ground-truth survey work done in the Chester River that sought to identify shipwrecks or other historic sites. Our mission was to validate targets from a July 2004 side-scan sonar survey of the Chester River conducted by Professor John Seidel of Washington College, Chestertown, Maryland. The targets we investigated, a subset of more than 180 available from the survey, were located on the southern portion of the river from Chestertown to Spaniard Point, near the river's mouth at the Chesapeake Bay. Dive depths ranged from 12 to 45 feet.

Side-scan sonar can detect objects that project above the bottom, in effect "illuminating" them, as shown in the figure below, a 19th-century sailing vessel sunk in the Chesapeake Bay. While this sonar picture is clearly a ship, the figure to the right is an image typical of what MAHS divers would be checking in the Chester River. Although this target was found to be a very old wooden retaining wall approximately 10 meters long by



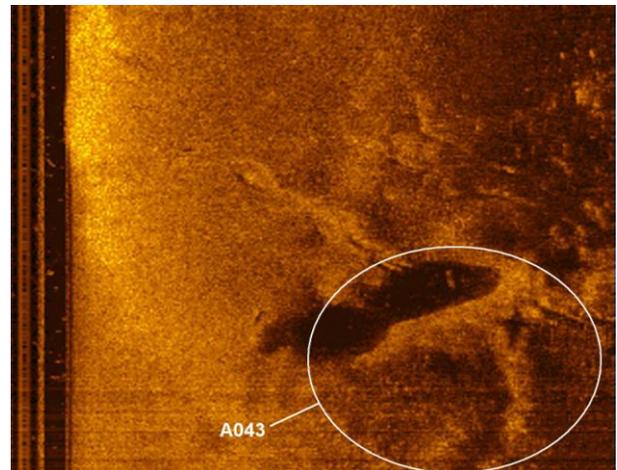
A clear side-scan sonar image: the Herbert T. Maxwell. Image by Gen Ralston.

4 meters wide, its nature is certainly unclear from the sonar image. Thus, our objective was to quickly explore as many of these sonar anomalies as possible and determine whether they were of sufficient interest to justify detailed archaeological examination at a later date.

Diving conditions in the Chester River are classic "Braille" diving. Thus, we conducted virtually blind circular searches in order to locate the anomalies. That leads to the question of just how large a circular search pattern would be needed to be reasonably certain we had adequately covered an area. The answer depends on the accuracy of the global positioning system (GPS) used to locate the anomaly originally, the accuracy of the GPS subsequently used by the dive boats to relocate the spot, and a number of error components associated with the

side-scan sonar equipment. For example, on this project, the GPS accuracies were about eight feet. Other sources of location error combined to raise the uncertainty to a composite error of about 16 feet.

In a typical search profile, the boat crew would drop a cinder block-weighted buoy on the GPS coordinates associated with a given target. A two-diver team would examine the side-scan image, and then go down with a

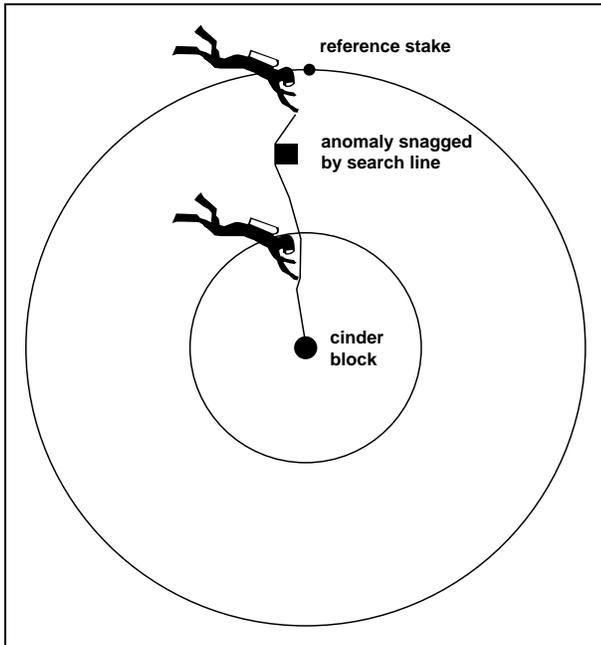


Typical side-scan sonar image from the Chester River survey. Image by John Seidel.

measuring tape or line and a reference stake. Securing the line or tape to the cinder block, divers then stretched out at arms length along the line, hands in contact, inserting a stake into the mud at the farthest point to serve as a reference. The divers swam in a circular pattern as shown in the figure on page 9. When they returned to the stake, they would know they had completed the first circle.

In the murky river waters, it would be easy to swim over an anomaly, so the divers moved slowly, hands extended and holding the line, hoping to swim into or snag whatever was on the bottom. Usually, two circles were searched, the largest radius being about 30 feet from the starting point. If nothing was found, the divers returned to the boat and went to the next location. If an object was found, it was explored by both divers and reported to the team's principle archaeological investigator who then did further exploration if it was deemed necessary.

On about half the dives, the divers found no evidence of the sonar anomaly, thereby raising three questions: 1) did the team terminate the searches too early; 2) what would have been gained by extending the search radius; and 3) how do the answers to the first two questions effect the project results, if at all?



Circular search pattern used in the Chester River survey.

Employing a simple mathematical model that uses the accuracy estimate discussed above, we calculated that we would have expected to find 24 or 25 anomalies in the 29 searches we were able to conduct—if the objects had not moved since the original sonar survey. Extending the two-circle search protocol to three or more circles would have increased this expectation by only one or two anomalies. The downside of such a change would have been that the divers' bottom time would have at least doubled (the distance traveled in a third circle almost equals the distance the divers swam in the first two circles together). In addition, the farther the divers went out from the central marker in zero visibility, the greater the likelihood of entangling the

search line and forcing them to abort the dive. All things considered, we felt that with the location accuracy we had, a 30-foot search radius was an acceptable cutoff point.

We actually found 15 anomalies, rather than the 24 or 25 predicted, suggesting strongly that some of the sonar bright spots were transient junk or non-significant projections from the mud, such as oyster shell piles. Some of the objects we did find, such as a canvas and aluminum boat top, a metal plate of contemporary origin, and crab traps entangled with debris, tend to confirm this conclusion. Another possibility is that some targets may have been covered by short term silting, and in future surveys could reappear. This suggests that in future explorations, some probing may be warranted to penetrate the top layer of fine river bottom mud if a sonar signature looks particularly promising but cannot be located.

At least two of the anomalies found by the MAHS divers justify future detailed archaeological examination. Two others probably should be revisited because the objects found, though perhaps dissociated, were old enough to be of some historic interest.

Overall, the MAHS participants and our sponsor, Professor Seidel, concluded that our search protocol was quite reasonable for a screening effort. By limiting the search area for each target, we were able to cover more sonar anomalies during the three-day project than would have been the case if we had concentrated on any one particular location. Further, our theoretical search calculations suggest that this was an optimal procedure for a project where the number of potential targets is large, but time is limited.

This article is based on a presentation made by Robert Speir at the Maryland Archaeology Conference, March 2005. ⚓

Linkages among Climate Change, Resources, Human Health and Economics

By Ray Hayes

For over three years, Ray Hayes, vice president of MAHS, has been working closely with the Harvard Medical School's Center for Health and the Global Environment, Swiss Re insurance underwriters, and the United Nations Development Programme on a project entitled Climate Change Futures (CCF). The final report from that project was released to the public at the American Museum of Natural History in New York City, on November 1, 2005. Dr. Hayes served as one of several contributing scientists for this report, preparing a

case study of potential scenarios concerning impacts of climate change on tropical coral reef ecosystems.

The CCF project stemmed from a common concern among the participating organizations about the emerging threats to health from climate change, as well as the implications of changes in Earth's life-support systems for world economic development. Unique aspects of the study include:

- Integration of corporate stakeholders in the assessment process

- Combined focus on physical, biological and economic impacts
- Anticipation of short-term impacts, rather than century-scaled projections
- Scenarios of plausible futures with gradual and step-wise change
- A framework to deal with and plan for climate-related surprise impacts

The CCF report contains trends, case studies, and scenarios which detail and analyze current climate change related consequences for human health, ecological systems, and the global economy. Ten case studies, written by scientific experts, are included in the report. Each outlines current effects of climate change with regard to infectious diseases (malaria, West Nile virus, Lyme disease, and asthma); extreme weather events (heat waves and floods); and ecosystems (forests, agriculture, and coral reefs). The studies survey existing and future costs associated with climate change and the growing potential for abrupt, widespread impacts. The report suggests that the insurance industry will be at the center of this issue, absorbing the risk and helping society and business to adapt and reduce any new risks.

In the coral reef ecosystem case study, Dr. Hayes addressed declines in coral reef vitality and integrity that have been documented by many marine scientists throughout recent decades. Mass coral reef bleaching was first observed in the early 1980's. Along with Dr. Tom Goreau, Dr. Hayes pioneered the "HotSpot" analysis that revealed anomalous elevations in sea surface temperature due to climate change to be the principal factor triggering coral bleaching. Bleaching represents the uncoupling of symbiotic associations between coral hosts and their microscopic algae or zooxanthellae. With the loss of this dynamic relationship, corals no longer function as keystone species that integrate the reef frame, sustain functional relationships within the reef community, and provide the physical characteristics of the reef habitat. When keystone coral species die and reefs cease to grow, structural and physiological balance among reef organisms are lost.

Degradation of reefs promotes rapid decline in associated ecosystems, including mangroves stands, sea grass beds, and beaches. Coastal wetlands that filter and protect against the spread of toxic industrial, agricultural, and domestic chemicals into the ocean are compromised. Associated ecosystems that serve as important nurseries and habitats for juvenile organisms are no longer able provide those services. Reef ecosystems cease to preserve and protect sandy beaches. These ecosystem degradations, attributable to

climate change, may additionally threaten the security and welfare of people, wildlife, and flora in tropical settings.

Rising air temperatures, that create deadly heat waves on land, cause rising sea temperatures that result in coral bleaching and emerging infectious diseases of reef organisms. These rising sea temperatures also fuel extreme weather events, such as hurricanes in the North Atlantic, Caribbean, and the Gulf of Mexico, typhoons in the Pacific, and secondary events (tornados and floods) worldwide. These events account for physical and functional damages underwater, even though the effects may be invisible from shore.

In addition to negative impacts upon natural ecosystems, cultural resources may also be damaged by storm activity. Storm surge and violent patterns of vertical and horizontal circulation accelerate degradation and displacement of shipwreck sites and submerged historic artifacts. Although the present CCF report does not focus specifically upon damages to submerged cultural resources, it is obvious that where disruption of marine ecosystems and threats to human health have been documented, destruction and dispersion of underwater archaeological resources may also have occurred.

The CCF report illustrates how escalating climate change is linked to the natural environment, to human health risks, and to the economy. It indicates why this information deserves attention from policy makers in government, the boardrooms of corporations, and among private citizens around the world. Real threats posed by future climate change, including rising sea level from glacial melting and thermal expansion, excessive burning of fossil fuels in industrial machinery, trucks and automobiles, and the persistent accumulation of greenhouse gases (e.g., CO₂, NO_x and SO_x) in the air that we breathe, must be addressed at all levels of society. How well and how quickly our generation responds to future climate change will determine our quality of life tomorrow and will exert lasting influence upon the availability of natural (and cultural) resources for research, education and enjoyment by future generations.

The CCF report is available for viewing in full at the following website: [↕](#)



The Legacy of Virginia Dare: The Search for the Lost Colony Settlement

by *Bill Utley and Ray Hayes*

In late summer of 1587, English settlers set foot on Roanoke Island, becoming the first English colony in the New World. Left to their own devices due to circumstance, they disappeared into time, leaving behind one of the New World's most enduring mysteries. What happened to the Lost Colony?

Truth be told, they weren't the first Europeans to settle in North America. By the time of the first English arrival in 1584, the Spanish had a decades-old presence in Florida and claimed a large portion of the East Coast of North America, including the area the English settled. The French had also established a presence in what is now Canada, and the Basques were fishing off Nova Scotia. In fact, it depends on your definition of "colony" as to whether the colonists of 1587 were even the "First Colony." At least they were the first colony that included families with a view to permanent settlement.

Previously, in the early 1580's, Sir Walter Raleigh was given a royal grant for land in "Virginia." In 1584, Raleigh sent a reconnaissance expedition that set up a base on Roanoke Island, then in the territory of Virginia. In 1585, Sir Richard Grenville, acting for Raleigh, led a group that landed on Roanoke Island. This was indeed, the first English colony. The expedition consisted of soldiers, adventurers, explorers, and scientists. There were no women or families with this group. The colony lasted until June 1586, when Sir Francis Drake happened by after raiding in the Caribbean. By this time, the colony was short on supplies and, having managed to kill a number of Indians, had worn out their welcome. When Drake offered them passage back to England, they took him up on the offer.

In 1587, a third expedition, consisting of 118 souls led by John White, who had been on the 1585 expedition, arrived on Roanoke Island. They were accompanied by two Indians who had voluntarily gone back to England with the second expedition – Manteo and Towaye. This was Manteo's third trip to England, since he had accompanied both the 1584 and 1585-6 groups. Manteo's tribe lived on Croatan Island, a name that would become an enduring part of the mystery of the Lost Colony. The settlers, while adventurous, lacked the skills to fend completely for themselves. It was clear early on that they did not have adequate supplies, and the Indians, while friendly, did not have the resources to feed 118 additional mouths. John White was persuaded to return to England to seek aid, leaving behind his daughter and new granddaughter Virginia Dare, the first English baby born in the Americas (a second baby was

born shortly thereafter). White expected to return within months. He would never see any of the settlers again.

By the time White arrived in England, Spain was threatening invasion, and all shipping was stopped in anticipation of fighting the Spanish Armada. It would be almost three years before White was able to leave England again. When he arrived back at Roanoke Island in August 1590, White found a deserted island – no Indians and no colonists. The site was rundown, and what items he found there, including his own personal goods, were scattered around the site. Before White departed three years earlier, he had arranged for a message to be left if the colonists were forced to leave. One form of the message denoted stress, and the other a normal exodus. White found two signs in 1590. One was the letters "CRO" carved in part of the crumbling stockade, and the second was the word "CROATAN" carved in a tree. The code indicating trouble was not present. Certainly White recognized "Croatan" as the location of Manteo's village on Croatan Island. But inexplicably, he did look there for the colonists. In fact, it appears that he made no serious investigation into their possible location before he returned to England. The settlers at Jamestown and others over the decades, made sporadic attempts to solve the mystery, but to no avail. Other matters became more pressing, and the Lost Colony became just another historical anomaly.

The middle of the 20th century saw a resurgence of interest in locating the Lost Colony. Pioneering archaeological work on Roanoke Island done by Jean C. Harrington, and later by Ivor Noel Hume and his wife Audrey, uncovered evidence of Grenville's 1585 settlement, including portions of a fort and the remains of the first scientific laboratory in the New World. But none of the archaeology pinpointed White's 1587 settlement or the contemporaneous Indian village. To date, no artifacts have been recovered that can be reliably dated to the 1587 colony.

Jump forward to the 21st century when, in 2004, a group of professional archaeologists, historians, and lay people founded the non-profit First Colony Foundation. The object of the Foundation is to conduct methodical archaeological and historical investigations to attempt to locate the 1587 colony. There is a distinction here that should be understood. The object of the Foundation is not to solve the mystery of what happened to the colonists, although that would be a bonus. The Foundation's goal is to locate the permanent site they established on Roanoke Island. This may not solve the mystery of their disappearance, but if located would fill

in many of the historical gaps. To that end, in October 2005 the Foundation funded the start of a multi-year maritime archaeological effort to seek evidence of the colony. This effort will take place in coordination with a similar terrestrial archaeological search.

At first blush, it may seem strange to be looking for evidence of the settlement in the water. But the only archaeological evidence recovered to date was located at the north end of Roanoke Island. This evidence included a barrel well found just off the northeast shore. The northern part of Roanoke, and in particular the northeast shoreline, has seen serious erosion in the past 400 years—in some cases hundreds of yards. Therefore, the possibility exists that the site has eroded into the water. Several years ago, MAHS Advisor, Dr. Gordon Watts, conducted a magnetometer survey of likely areas in the northeast and east-central waters off Roanoke Island. This survey turned up several hundred magnetic anomalies, although circumstance did not allow a follow-up search at that time.

In August 2005, Dr. Watts contacted the authors with a view to putting together a small team to conduct two-weeks of target proofing of the magnetic anomalies. The members of the team included Dr. Watts, the authors, and Randy Little, Senior Engineer from Ingersoll Rand Corporation. Costs for travel, lodging, and meals were covered by a grant from the First Colony Foundation, while Dr. Watts' non-profit organization, the Institute for International Maritime Research, supplied the boat, along with technical and diving equipment. With several hundred targets to locate and check, this two-week effort was just the start of what should prove to be a multi-year survey.

As seems to be the norm in the waters off Roanoke Island, underwater visibility was limited to a few inches, until the start of digging, when visibility was lost completely. Average depth was 5-6 feet, and it is unclear if the rumor is true that divers were sticking their depth gauges into the holes they dug to get a reading.

The search area was located just off shore from the northeast tip of the island. While the location was only a couple of miles by land from our base of operations, the boat trip from Manteo harbor in the middle of the island took about 25 minutes. The sequence of searching quickly took on a predictable form. Buoys would be

dropped on previously located targets. Then Dr. Watts, being the least vertically challenged diver, would enter the shallows with a portable magnetometer and pinpoint the location of the anomaly. A second diver would then follow and dig until the object was located.

The goal of the two-week survey was to eliminate 10 percent of the possible targets. But the wind increased as the days went by, playing havoc with diving conditions. Because we were working from a 25-foot boat, very little wind would make things bumpy. By the end of the first week, the wind had picked up to a degree that diving had to be cancelled on two days. Other days, staying on the boat became somewhat of a wild ride for the individual with surface duty. In the end, we accomplished less than our goal, but managed to eliminate some large anomaly concentrations. While most of the targets were parts of crab pots, several items were fragments of a Civil War mortar probably fired during the Union assault on the island.

In archaeology there is really no such thing as a negative result. The fact that we did not find any 16th-century artifacts was not discouraging. Eliminating search areas also serves to narrow down the search to other potential areas. Next year's survey will continue the target proofing and may also include a second boat to start some underwater trenching of likely areas. The primary reason for searching the north end of the

island is that this where the only 16th-century artifacts have been found. But the historical record is not entirely clear whether this is the site of the 1587 colony. In fact, the fort at that location is much too small and badly sited to be the primary fort from the earlier 1585 settlement (although the local history identifies it as such). Additionally, there is no sheltered anchorage off the northeast end of the island. There is some minimal shelter for small vessels off the northwest side of the island, but by far the best sheltered anchorage lies in the vicinity of Manteo, in the east-central area. This area has never been explored and is on our list to check in the coming years. Perhaps all evidence of the colony and the Indian village has long disappeared under modern housing, the airport, or by the sea. Only time and hard work will prove or disprove the many conflicting theories. ⚓



Bill Utley receives instructions from Gordon Watts before a dive on the north end of Roanoke Island. Photo by Ray Hayes.

Barbados Marine Trust Holds Its First Underwater Archaeology Field School with Support from MAHS Educational Materials

By Dennis Knepper

In the past year, MAHS continued to promote maritime heritage internationally through the distribution of its video education programs to Latin America and the Caribbean Islands. The program was particularly well received in Barbados, where it is being used by the Barbados Marine Trust to support an emerging curriculum in underwater archaeology.

In late 2003, the Barbados Marine Trust, a non-governmental organization that promotes resource conservation in the maritime environment of the island, purchased the MAHS video series, *Diving Into History*, to help in developing a maritime cultural resource management program to complement their natural resource conservation initiatives. Following the MAHS model, the Trust is training a group of divers in the proper theory and practices of underwater archaeology, planning to call on volunteers from the group when projects arise in the future. The Trust has held two classes in Basic Underwater Archaeology, both in 2004, using the video series as the basis of the course. Participants in the first class included members of the Board of Directors of the Marine Trust, while the second class included representatives from the national government, instructors from Underwater Barbados (the dive shop in the capital city, Bridgetown, that supports the Marine Trust's dive activities), and employees from a marine reserve on the west coast of the island.



Field school participants practicing trilateration on dry land: this looks easy! Photo by Dennis Knepper.

Near the end of the first class, MAHS members Ray Hayes and Dennis Knepper went to Barbados to offer assistance, answer questions that had arisen during the class, and to discuss the potential for field school activities. In March of 2005, Hayes and Knepper, along



Initial reconnaissance and sketch mapping. Photo by Bill Utley.

with MAHS' Bill Utley, returned to the island to assist the Marine Trust instructors with their first field school.

The field school was held at Underwater Barbados, on the beachfront of Carlisle Bay, Bridgetown's harbor. A group of eight participants gathered to watch the MAHS field school video at the shop, after which they retired to the beach to try their hand at *dry-lateration*, or dry-land trilateration, as preparation for mapping an underwater site.

The site chosen for the open water portion of the field school was a small barge that is part of a shipwreck trail recently constructed in Carlisle Bay (see the earlier article in this issue of *MAHSNEWS*). The barge was originally a garbage scow that had been used in construction of Barbados' new deep water harbor, north of Carlisle Bay, in the 1960s. It was added to the trail a



Laying a baseline down the center of the vessel that was the subject of the field school – a small garbage scow or barge. Photo by Dennis Knepper.

couple of years ago. Lying flat on the bottom in 15-20 feet of clear, protected water, the barge is relatively small, about 30 feet in length, with a low profile. It has simple, well-defined lines, making it fairly easy to map. But it also contains features such as a small wheel house or winch that can be used to practice detail drawing. All in all, it is a great site for a field school.



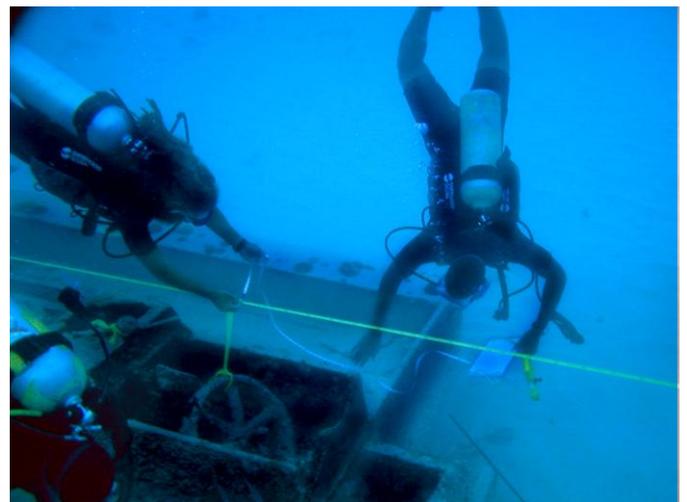
Trilateration: pulling the tape tight while staying clear of the baseline is harder than it looked on dry land. Photo by Dennis Knepper.

The in-water part of the class began with the participants drawing sketch maps of the wreck, to familiarize themselves with the site and to help in developing plans for detailed survey. At the same time, they selected and tagged important features to be included in their maps. An interesting issue that arose during the planning stage, and one that is at the heart of every successful survey and mapping project, was where to put the baseline. While low in profile, the wreck stood as much as 4 feet off the bottom. Attaching the baseline to the bow of the vessel and running it down the centerline to the stern was one option. But the result would be a short baseline that would make it difficult to capture artifacts and features in the surrounding debris field—and as we have learned, a shipwreck site often consists of more than just the structural remains of a vessel. As an alternative, a longer baseline could be laid on the sandy bottom next to the barge, but measuring up from the line to the level of the vessel's features would



Drawing details of features on the wreck. Photo by Dennis Knepper.

be difficult. In another possibility, a long line could be used in tandem with the a baseline on the vessel, allowing the archaeologists to map the debris field as well as the ends of the primary baseline. A final option, and the one eventually chosen by the field school participants after some discussion, was to suspend a long baseline over the centerline of the barge, attaching the ends to 4-foot lengths of rebar pounded into the bottom



Taking trilateration measurements: head down, feet up—looks like good form. Photo by Dennis Knepper.

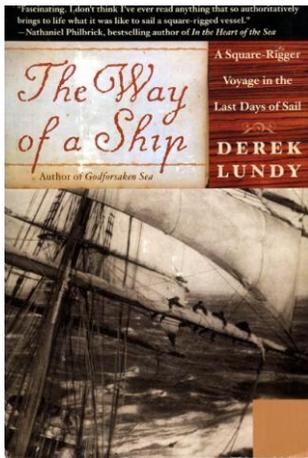
sediments well beyond both the vessel and the edges of the debris field.

Even though all of the participants were professional divers accustomed to working underwater, doing trilateration work still took some practice. It didn't take long to realize that even something as apparently straightforward as recording a series of dimensions with a tape measure requires some skill to do correctly and accurately underwater. One of the advantages of working on a wreck with clean, distinct lines and a symmetrical shape was that measurement errors were quickly apparent when the data were plotted back at the dive shop.

In the end, the field school was a great learning experience for all involved. Barbados is now well on its way to having a group of trained avocational underwater archaeologists able to assist in managing the rich maritime cultural heritage of the island. †



*Plotting the data after the dive.
Photo by Dennis Knepper.*



***The Way of a Ship* by Derek Lundy, Harper Collins Publishers**

Book Review by Dennis Knepper

a single headland, furling and unfurling heavy, stiff, and frozen canvas sails in icy, relentless winds with undermanned crews depleted by scurvy, and with a cargo of coal burning out of control in the hold...this is romantic? Maybe not, but it does make for an interesting and compelling story, especially when told with the vivid detail of Derek Lundy's *The Way of a Ship*.

The story is a fictionalized recreation of an actual voyage made by Lundy's great-great uncle in 1885, sailing from Liverpool to San Francisco via the Horn. The Horn. Cape Horn: the southern tip of South America, notorious for high seas and almost unimaginably bad weather. At these latitudes, the winds howl interminably out of the west, making the passage from the Atlantic to the Pacific one of the most difficult and perilous on earth. As Lundy puts it, "try to visualize a never-ending series of five- or six-story buildings moving toward you at about forty miles an hour." Even near the turn of the 20th century, ships were routinely lost

The lure of the open ocean, the romance of the sea. Sounds great, doesn't it? But what's so romantic about sailing into gale force winds in sub-freezing temperatures, taking literally months to round

in the passage and in an average year a sailor stood one chance in twenty of dying during the voyage.

The ship in Lundy's story is the *Beara Head*, one of the last of the great metal-hulled, square-riggers, a huge, four-masted behemoth that carried coal to California to fuel the coastal steamships there. Lundy salts his narrative liberally with historical information regarding the end of the Age of Sail, describing the gradual replacement of sailing ships by steam-driven vessels. And the irony of those final years is not lost on him, as he describes the great wind ships helping ensure their own obsolescence, transporting fuel to power the vessels that would eventually replace them.

The backdrop for the story is told in the technological and social changes occurring at the time—the development of machine propulsion, economic upheaval, and in particular, the escape from the Irish Depression via the Liverpool dockyards. Lundy portrays the sailor's world—in contrast to the life of the steamship crew—as a place that was contained and orderly, but also highly regimented, extremely dangerous, and totally unforgiving. He describes the life of those who rounded the Horn as one of both high exhilaration and extravagant suffering. He includes a wealth of detail about of the mechanics of ship handling, setting canvas and adjusting rigging, and tacking and wearing ship in foul weather. Also sprinkled throughout are quotes from the great sea authors of the 19th century—Conrad, Melville, and Dana—providing an

aesthetic perspective on the world of the sailor at the end of the century.

The narrative is occasionally a little too broken up with long background segments, so that the text reads at times like an extended National Geographic article. Early Patrick O'Brian or the best of Jack London are perhaps better for sheer adventure writing, but Lundy's work is informative, fast-paced, and entertaining. He gives a gripping account, for example, of being sent aloft for the first time to the masthead 165 feet above the deck, and going back many times thereafter in all kinds of weather. His description of the near foundering of the

huge ship as it broaches to under the onslaught of a gigantic rogue wave is spectacular and almost frightening.

Lundy is no stranger to the Southern Ocean. As an amateur sailor, he has himself sailed around the Horn and has written an acclaimed account of the Vendée Globe, a solo, round-the-world sailing race that some consider the most dangerous race in the world. *The Way of a Ship* is a fine tribute to the last of the great wind ships and the men who sailed them. And it is a great read. ⚓

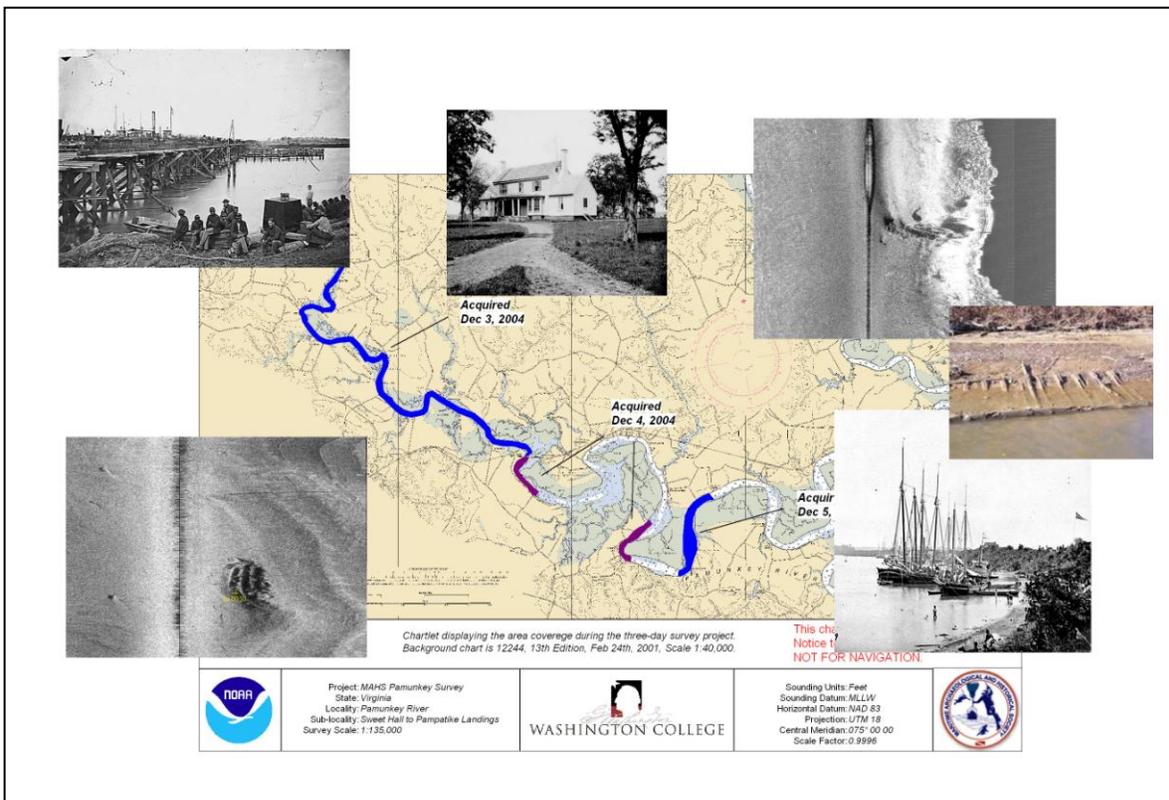
Pamunkey River Project Update

As we go to press, the Pamunkey River project is in the field. This is an ongoing project that serves this year as an additional field school opportunity for students of the Basic Underwater Archaeology Course who want to complete their field certification.

Throughout May and June of 1862, the banks of the Pamunkey were an integral part of the Union Army's Peninsula Campaign against the defenses of Richmond. A flotilla of canal boats, barges, and schooners helped transport McClellan's Army of the Potomac upriver toward the Confederate capital.

The Richmond and York River Railroad which ran southward from Richmond was an ideal supply line for the Union forces. The rail line crossed the Pamunkey at White House, the residence of Martha Custis Lee, wife of Robert E. Lee. The bridge at White House was turned into a supply wharf and trains and boxcars supplied McClellan's troops advancing from the south. White House also became the site of the Union Army hospital, and hospital ships docked along the busy riverbanks. As a result of J.E.B. Stuart's famous ride around McClellan's army, many of the structures and vessels

continued on page 18



Pamunkey River Project. Clockwise from lower left: Side-scan sonar image of an unidentified target along the river; railroad bridge at White House Landing; White House; unidentified sonar image; frames of a barge-like vessel currently visible on the river bank; vessels at White House Landing. Background image: NOAA navigation chart.

Speaker Series Continues

by Jim Smailes

Our speaker series continued in June with Michael Bosworth, from the National Maritime Heritage Foundation. The NMHF is a 501(c)(3) non-profit organization, founded in 2000 as the official maritime heritage organization of the District of Columbia. Mr. Bosworth described the NMHF mission to provide community sailing programs for children and adults in Southwest Washington, D.C., and maritime education programs in schools throughout the region. Their goals are to re-connect the people of the Washington region to the rivers, focus on the region's maritime history, and support community development. The NMHF plans to build a tall ship to serve as a living model of maritime and naval history. The *Spirit of Enterprize* will be a replica of the famous historic topsail schooner *Enterprize*, 140 feet long and 160 tons, commissioned by George Washington, and based in Washington, D.C.

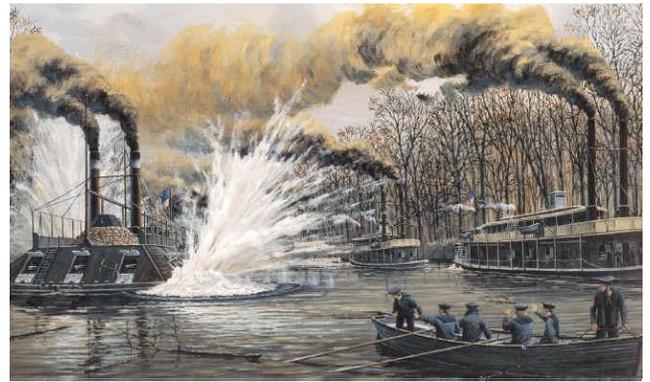
In July, MAHS member Greg Stitz returned to speak about submarine museums. He had presented a talk in February about submarine accidents in peacetime, and now spoke about the numerous maritime museums around the country with submarines on display.

Following a break in August for our summer picnic, Robert Neyland from the Naval Historical Center joined us in September to present the latest findings from the *CSS Hunley*. A number of new slides, not yet released to the public, showed the work underway in the conservation lab. The crew remains had been removed and analyzed, and reconstructions of the appearance of the crew were shown. The crew has now been buried in Charleston. Pictures of the internment ceremony showed the large number of Civil War re-enactors that were involved, including one of the attendees at the MAHS lecture!

In October, J. Michael Moore spoke about the Peninsula Campaign of 1862 that is of particular interest to those MAHS members working on the Pamunkey River project. Mr. Moore, a military historian, described the uniqueness of joint Army-Navy campaigns in the Civil War, since there was no unified command structure similar to that used today. During the Civil War, the Navy and Army commands were separate, and cooperation on joint projects was left up to the respective commanders. He compared the effectiveness of the joint efforts by General Grant and Admiral Foote in taking Confederate Forts Henry and Donelson on the Mississippi with the inability of McClellan and Flag Officer Louis Goldsborough to cooperate in the Peninsula Campaign, the largest amphibious operation in U.S. history up to that time, with more than 121,500 men and 400 vessels involved. The impacts of their failures

to cooperate was a major contributing factor to McClellan's inability to defeat the Confederate forces and capture Richmond, both the political and, more importantly, industrial capital of the Confederacy. With Richmond captured, the South could not have continued, and the war might have ended at least two years earlier than it did. Quite a speculation, but it is interesting to consider how US history would have been different had the Civil War ended in late 1862 or early 1863!

In November, Edwin Bearss continued our Civil War theme by speaking about the Civil War ironclad, *Cairo*.



Sinking of the Ironclad Gunboat Cairo.

Longtime Chief Historian with the National Park Service, Bearss recreated both the sinking and raising of the *Cairo*, or as he subtitled his talk, "How Not to Raise a Civil War Gunboat." The *Cairo* was one of the first ironclad, river gunboats built by the Union. Commissioned in January 1862, *Cairo* was 165 feet in length, 51 feet wide, with 13 heavy guns, and a crew of 175. Sunk in December 1862 in the Yazoo River, a tributary of the Mississippi, she had the dubious distinction, Bearss noted, of being the first known military vessel to be sunk by a mine. Due to ongoing military action in the area the vessel was not salvaged, and she became buried in the quickly accumulating silt. Rediscovered by Bearss in 1956, she was eventually raised in 1964 after several attempts. In the process, the 3-inch cables used for lifting cut through her wooden hull. She was finally broken apart and raised in three sections. Despite the unfortunate events surrounding her raising, the *Cairo* was an archaeological treasure trove. She had gone down rapidly, and while there was no loss of life, the crew escaped with little more than the shirts on their backs. Excavation of the *Cairo* yielded more than 60,000 artifacts, including cannon, small arms, ammunition and other military hardware, medicine bottles, and a wide variety of personal items from buttons and shoes to pipes, combs, and toothbrushes. †

Preznotes *continued from page 2*

has been conducting its classes and meetings at the McLean High School. Please see the website for the address and directions. This is a wonderful facility, and we thank Terry Nelson for making the arrangements with Fairfax County Schools again this year.

Finally, I am pleased to report that the MAHS Board extended an invitation to Dr. Robert Neyland, Head of the Archaeology Branch of the Naval Historical Center, to serve on the MAHS Board of Advisors, and he has graciously accepted. We look forward to working

more closely with Dr. Neyland, and MAHS will surely benefit from his future counsel.

As you can see, it has been a busy and productive summer for MAHS, and I thank all of the members and advisors who volunteered their time to help us extend our message of stewardship and shipwreck preservation throughout the country and around the world.

See you on the water.

Steven Anthony
President ⚓

Cherryfield *continued from page 4*

familiar with the routine, lost no time in suiting up and entering the water. They proceeded with their assigned tasks and for the next three hours focused on gathering the remaining measurements to complete their drawings. By lunchtime, everyone was ready for a break and returned to the *Roper* to report their findings. It was a very productive morning and after reviewing the work, Tom and Kurt concluded that the job was done and all the data he was seeking for this trip had been successfully collected. So, *Roper* headed back to the dock early, and Tom and Kurt conducted their final briefing along the way. The students were finally able to relax and reflect on their first underwater archaeology expedition. After transferring the gear to our vehicles, we were all on our way back home again well before sunset.

From what the MAHS trainers could determine, it was a very successful field school. The students had collected sufficient information



L to R: Front Row: T. Berkey, M. Damian, S. Anthony, C. Dowdle, J. Steinmentz; Second Row: M. Ryan, C. Dowdle, D. Lambert, K. Elliott, C. Dunn, K. Knoerl, C. Lukezic, D. Howe. Photo by Michele Anthony.

to support the ongoing study of the Cherryfield site and expressed how much they had enjoyed the course. ⚓

Pamunkey *continued from page 16*

were burned, including the Lee's White House, which was fired by Union soldiers as they retreated. Research indicates that at least 80 shipwrecks from the Civil War period may lie along this reach of the Pamunkey River.

In past MAHS surveys, disarticulated shipwreck remains and what may part of be the Union supply dock at White House have been identified. In 2004, MAHS teamed with John Seidel and Washington College to conduct a side-scan sonar survey of the river. Over 100

targets were acquired. The goal of the current project is to examine a sample of those targets and conduct a field school, mapping one of the barges.

Bruce Terrell is Project Archaeologist, and Steve Anthony is MAHS Project Manager. A project update that includes results from the November survey will be presented at the Middle Atlantic Archaeological Conference in Virginia Beach in March, and a report is planned for the Spring issue of *MAHSNEWS*. ⚓

MARITIME ARCHAEOLOGICAL AND HISTORICAL SOCIETY

Statement of Ethics

The Maritime Archaeological and Historical Society is organized for the purpose of enhancing public awareness and appreciation of the significance of submerged cultural resources and the science of maritime archaeology. In pursuit of this mandate, members may come in contact with unique information and cultural material associated with terrestrial and underwater sites containing evidence of the history of humankind. To protect these sites from destruction by commercial salvors and amateur souvenir hunters, the Society seeks to encourage its members to abide by the highest ethical standards. Therefore, as a condition of membership and pursuant to Article 2, Section 1 (A) of the bylaws, the undersigned executes this statement of ethics acknowledging adherence to the standards and policies of the Society, and further agrees as follows:

- 1. To regard all archaeological sites, artifacts and related information as potentially significant cultural resources in accordance with federal, state, and international law and the principles and standards of contemporary archaeological science.
2. To maintain the confidentiality of the location of archaeological sites.
3. To excavate, or otherwise disturb an archaeological site solely for the purpose of scientific research conducted under the supervision of a qualified archaeologist operating in accordance with the rules and regulations of federal, state, or foreign governments. Artifacts shall not be removed until their context and provenience have been recorded, and only when the artifact and related data have been designated for research, public display or otherwise for the common good.
4. To conduct oneself in a manner that protects the ethical integrity of the member, the archaeological site and the Society, and prevent involvement in criminal violations of applicable vandalism statutes.
5. To observe these ethical standards and aid in securing observance of these standards by fellow members and non-members.
6. To recognize that any member who violates the standards and policies of the Society shall be subject to sanctions and possible expulsion in accordance with Article 2, Section 4 of the bylaws.

Signature _____ Date _____

(Revised 1993)

MARITIME ARCHAEOLOGICAL AND HISTORICAL SOCIETY
P O Box 44382, L'Enfant Plaza, Washington, DC 20026
Application for Membership

Membership in the Maritime Archaeological and Historical Society is open to all persons interested in maritime history or archeology whether or not they are divers. Members of MAHS have first preference for enrollment in all courses and other activities and projects of the Society. To join MAHS, please sign the Statement of Ethics above and send it to MAHS along with your check and this application form.

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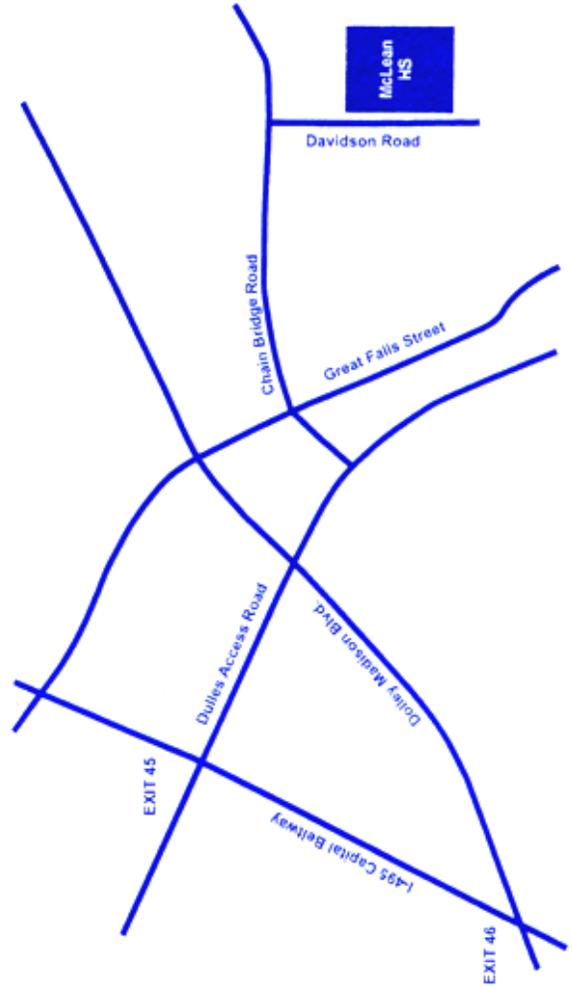
Skills (circle): research/dive/photo/video/communications/drawing/writing/first aid/other:

Please mail this form along with your check to: MAHS at P.O. Box 44382, L'Enfant Plaza, Washington DC 20026.

General membership meetings of the Maritime Archaeological and Historical Society (MAHS) are held at 7:30 p.m. on the second Tuesday of each month. MAHS meets at McLean High School, in McLean, Virginia, except in July, August and December. The school is located on Davidson Road, just inside the Capital Beltway (I-495) - use Exit 45, coming from Maryland, or Exit 46, coming from Virginia. Meetings in July, August and December are held at other locations for special events and holiday parties. Please join us and bring a friend.
{Check the website www.MAHSNet.org for e-mail advisories about any schedule changes.}

Renew Now!

It's time to renew your membership in MAHS. It's easy. Just complete the application form on the inside back cover and sign the Ethics Statement, enclose a check for your dues, and mail! Thank you!



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